Integrated Algebra
Unit 3 Review-Systems

Name _____*Key*_____
Hr_____

Solve each system by graphing.

1. $y = x + 7$

   $2x + y = 1$ $-y = -2x + 1$

   $(-2, 5)$
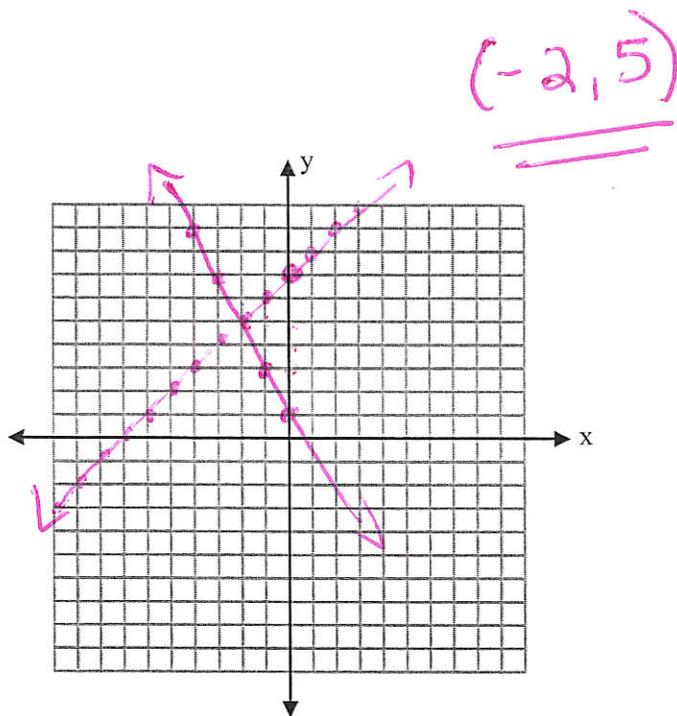
2. $y = \frac{1}{2}x + 3$

   $x + 2y = 10$ $y = -\frac{1}{2}x + 5$

   $(2, 4)$
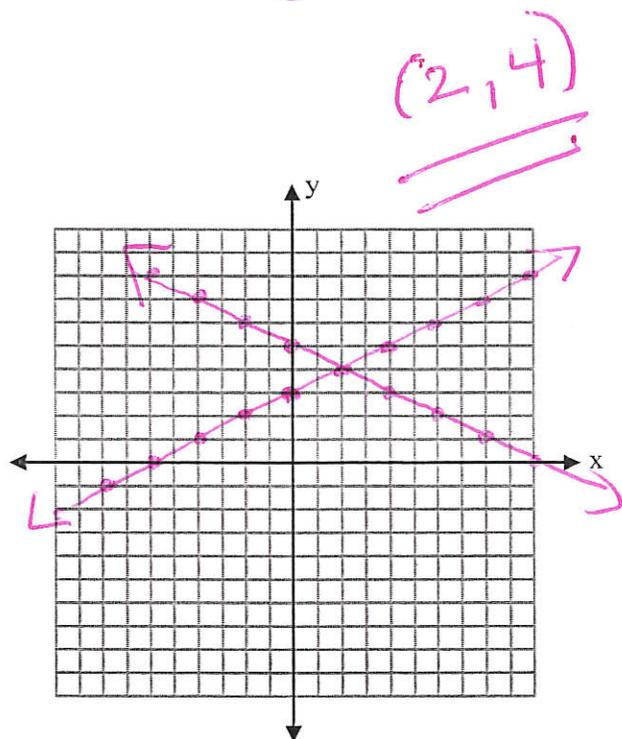
Solve each system of equations using substitution.

3. $y = -2x + 1$
   $y = x - 5$

   $-2x + 1 = x - 5$ $y = 6 - 5$

   $-1x = -6$ $\boxed{y = 1}$

   $\boxed{x = 6}$ $(6, 1)$

4. $x = -2y - 4$
   $3x - 4y = -12$

   $3(-2y - 4) - 4y = -12$

   $-6y - 12 - 4y = -12$

   $-10y = 0$

   $y = 0 \quad x = -4$

   $(-4, 0)$

5. $y = 5x + 3$
   $5x + 3y = -7$

   $5x + 3(5x + 3) = -7$

   $20x + 9 = -7$

   $20x = -16$

   $x = -16/20 = -8/10 = \boxed{-4/5}$

   $y = \frac{-4(5)}{5} + 3 \quad \boxed{y = -1}$

   $\left(\frac{-4}{5}, -1\right)$

6. $x = 3y - 1$
   $x = -2y + 9$

   $3y - 1 = -2y + 9$

   $5y = 10$

   $\boxed{y = 2}$

   $(5, 2) \quad \boxed{x = 5}$

Solve each system of equations using elimination.

$\left(\frac{11}{2}, 1\right)$

7.
$$x + 4y = 12$$
$$4\left[3x - y = 10\right]$$

$$x + 4y = 12$$
$$12x - 4y = 40$$
$$\overline{13x = 52}$$
$\boxed{x = 4}$ $\boxed{y = 2}$ $(4, 2)$

8.
$$2x - y = 10$$
$$6x + y = 34$$
$$\overline{8x = 44}$$
$$x = \frac{44}{8} = \frac{11}{2}$$
$$y = -6x + 34$$
$$y = -6\left(\frac{11}{2}\right) + 34$$
$$= -33 + 34$$
$$y = 1$$

9.
$$+2\left(2x + 3y = 10\right)$$
$$-3\left(3x + 2y = 5\right)$$

$$+4x + 6y = +20$$
$$-9x - 6y = -15$$
$$\overline{-5x = 5}$$
$\boxed{x = -1}$ $(-1, 4)$

$$3x + 2y = 5$$
$$3(-1) + 2y = 5$$
$$2y = 8$$
$\boxed{y = 4}$

10.
$$4x - 2y = 8$$
$$6x - 3y = 12$$

11.
$$6x + 15y = 28$$
$$7x + 17.5y = 24$$

12.
$$-3x + 5y = -7$$
$$9x + 2y = 38$$

13. Shopping at Savers Mart, Lisa buys her children four shirts and three pairs of pants for $85.50. She returns the next day and buys three shirts and five pairs of pants for $115.00. What is the price of each shirt and each pair of pants? Write and solve a system of equations. Let x = price of each shirt and y = price of each pair of pants.

$$-3\left(4s + 3p = 85.50\right)$$
$$4\left(3s + 5p = 115.00\right)$$

$$-12x - 9y = -256.50$$
$$12x + 20y = 460$$
$$\overline{11y = 203.50}$$

240
15
1.50

$$y =$$

Graph each inequality.

14. $-4x + 2y < -14$

$2y < 4x - 14$

$y < 2x - 7$
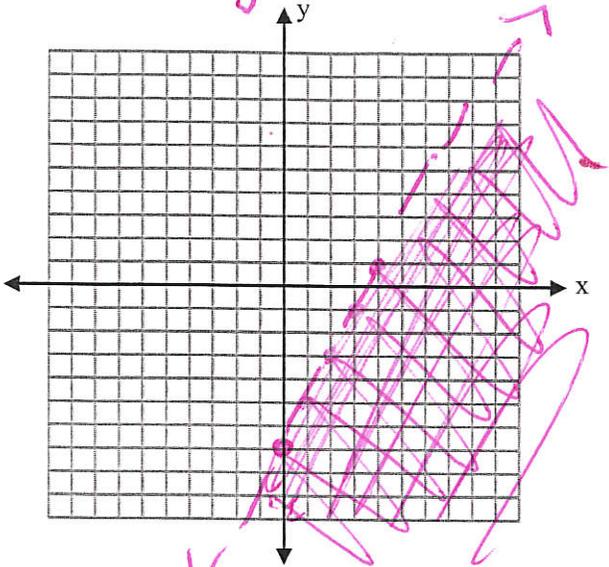
15. $3x - 6y \geq 18$

0 −3
6   0

Test
(0,0)
0 ≥ 18
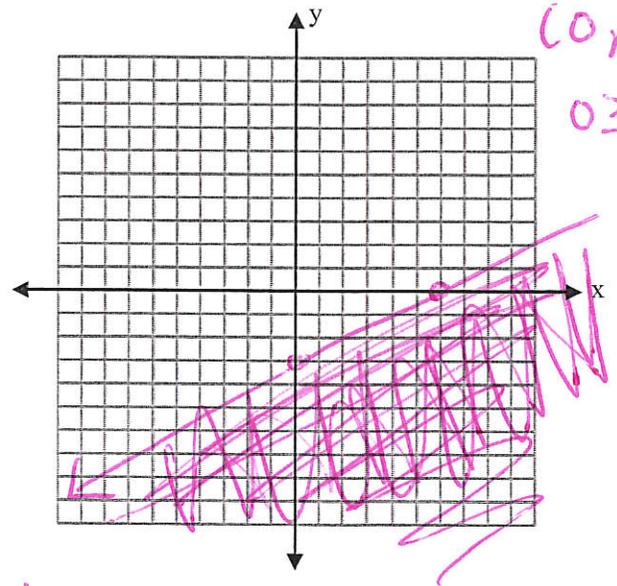
Solve each system by graphing.

16. $3x + 2y > 1$
    $2x + 6y \leq 8$

$y \geq -\frac{3}{2}x + \frac{1}{2}$

$y \leq -\frac{1}{3}x + \frac{4}{3}$
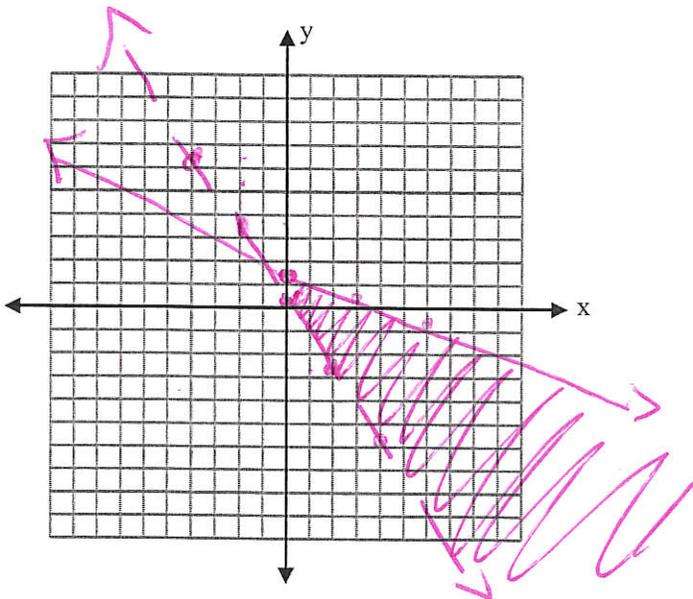
17. $x \geq 4$
    $y < -7$
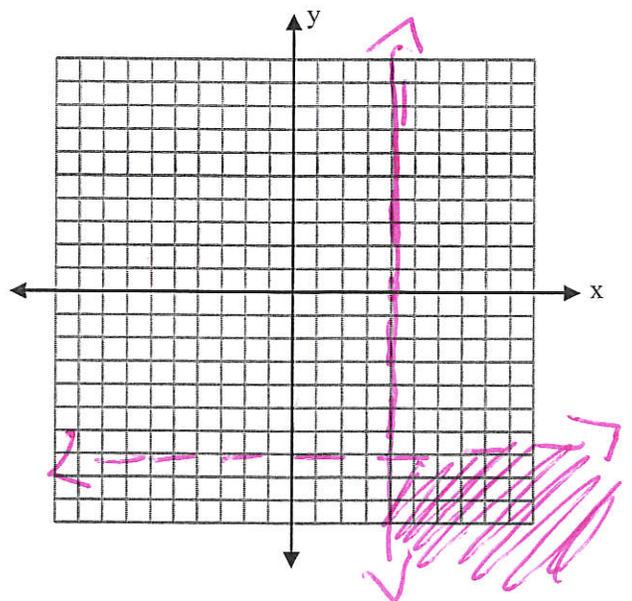
18. Suppose that a farmer has no more than 150 acres for planting corn and beans and has a maximum of $2000 to spend to the planting. It costs $10 per acre to plant corn and $20 per acre to plant beans.

a. State your variables.

let x = acres of corn
y = acres of beans

b. Write two inequalities to represent this problem.

$x + y \leq 150$
$10x + 20y \leq 2000$ →

0	100
200	0

c. Can you write two more?.

$x \geq 0$

$y \geq 0$

acres beans

d. Graph the system of constraints. Label the axes. (go by 10s).

Shade the solution set.

acres corn

e. State the corner points.

$(0,0)$ $(150,0)$
$(0,100)$ $(90,60)$

f. Name one possible combination of corn and beans that are in the solution set.

$(40, 50)$

40 acres corn, 50 acres beans